

## PETROLEUM PRODUCT CONSUMPTION AND REFINING

### Overview

Domestic fuel consumption fell slightly from 2004 through 2006 (the latest year for which official data is available) in response to the government's decision to raise subsidized fuel prices by an average 126% in October 2005. Fuel consumption fell by 6% from 64.7 million kiloliters (KL) in 2005 to 60.8 million KL in 2006. Consumption in 2004 was 64.7 million KL, 59.9 million KL in 2003, and 57.8 million KL in 2002. All categories of petroleum products saw slight to moderate decreases in consumption when compared with 2005. Auto diesel consumption fell from 27.5 million KL in 2005 to 25.4 million KL in 2006. Gasoline consumption declined slightly from 17.83 million KL to 17.63 million KL in 2006. In 2006, fuel product imports decreased by 19.5% to 133.4 million barrels.

The majority of domestic consumption is for transportation (46.7 percent), industry (24.6 percent), household use (18.2 percent) and electric power (10.5 percent). The transportation sector uses largely automotive diesel oil (ADO), while households are the largest consumers of kerosene.

Pertamina's Downstream Directorate is responsible for the distribution of fuel products to end-users from 174 storage depots throughout Indonesia. The Directorate has established eight regional representative offices to market the products. Fuel products are transported via an elaborate pipeline network and by tank trucks, rail tank wagons, tank vessels and barges. Pertamina controls the sale of gasoline and automotive diesel by direct ownership and franchise of close to 3,000

gasoline stations nationwide. Pertamina itself only owns 2% of the retail stations. The private sector also sells kerosene. The selling price of fuel oil on the domestic market, excluding industry fuels, is determined by the government. Since 2005, prices for high grade automotive fuels and industry fuels are adjusted according to market prices and are managed by Pertamina.

**Domestic Fuel Consumption**  
(Million Liters)

Products	2004	2005	2006
Auto Diesel	26,487.75	27,470.43	25,382.00
Gasoline	17,027.44	17,828.53	17,631.55
Kerosene	11,846.12	11,385.58	10,023.21
Fuel Oil	5,754.51	4,827.88	4,820.18
Diesel Oil	1,093.41	895.21	497.82
Avtur	2,437.92	2,330.40	2,428.08
Avgas	3.42	3.07	3.39

Source: Migas

### Oil Refining

Since 2004, Indonesia's production of petroleum-based fuels and non-fuels from domestic refineries has remained just under 1 million bpd, largely due to decreases in domestic crude supply. In 2006, production was 958,709 bpd, down 2% from 979,876 bpd in 2005. Most of the petroleum products refined in Indonesia are destined for domestic consumption. Indonesia has nine oil refineries with a combined installed capacity of 1.06 million bpd. Eight of them are owned and operated by state oil and gas company Pertamina, and one – Cepu – is owned by the Research and Development Agency of the Department of Energy and Mineral Resources. The nine refineries are located in Sumatra, Java, East Kalimantan and Irian Jaya. They produce a mix of oil fuels (diesel,

fuel oil and kerosene), liquefied petroleum gas, secondary fuels (such as naphtha) and non-fuels (such as asphalt and lubricants).

According to government figures, on average Pertamina's refineries operated at 91% of their combined capacity of 1.056 million bpd in 2006. The lack of spare capacity also means that Indonesia must seek overseas imports if its larger refineries are closed for maintenance.

**Oil Refinery Production (1,000bpd)**

Refinery/Location	Crude Processed		
	2004	2005	2006
Pangkalan Brandan, N. Sumatra	2.3	2.5	1.9
Dumai, C. Sumatra	122.1	121.4	126.9
Sungai Pakning, C. Sumatra	48.6	49.0	38.6
Plaju, S. Sumatra	107.4	101.4	93.8
Cilacap, C. Java	332.5	315.7	322.5
Balikpapan, E. Kalimantan	264.3	259.5	254.5
Balongan, W. Java	111.9	120.2	116.6
Kasim, Papua	8.4	7.8	1.5
Cepu, C. Java	2.2	2.5	2.2
<b>TOTAL</b>	<b>999.8</b>	<b>979.9</b>	<b>958.5</b>

Source: MIGAS

In light of rising import cost, Pertamina began using more domestic crude oil in its refineries.

## Refinery Projects

### *Pangkalan Brandan*

This small, aging refinery consists of a simple (primary) distillation unit, with no secondary processing unit. Its products are premium fuels, diesel, LSWR and asphalt. Pangkalan has a processing capacity of 5,000 bpd, although it was shut in 2007 and may not reopen.

### *Dumai*

The Dumai refinery has both a primary and a secondary processing unit (Hydro

Cracker), which can produce LPG, naphtha, HVGO and green coke. Its processing capacity is 120,000 bpd.

### *Sungai Pakning*

Built around 1957, the plant refines heavy paraffin crude oil to produce diesel and paraffin, with a capacity of 50,000 bpd.

### *Plaju*

This aged refinery was built by Shell in 1930. It consists of both a primary unit and a secondary processing unit. The secondary unit, a Fuel Catalytic Cracker Unit (FCCU), can process up to 135,000 bpd and was designed to produce PTA and Polytam. In August 2003, operating problems at Plaju closed the refinery for one month, delaying maintenance on the Balongan refinery. Pertamina has proposed converting the facility into a petrochemical plant by 2008.

### *Cilacap*

Indonesia's largest refinery located in Central Java, Cilacap has a 348,000 bpd capacity. Its products are premium fuel, kerosene, diesel, fuel oil, and naphtha. Its secondary processing unit is nearly the same as that of Plaju (FCCU) and produces lube base products. The bulk of crude supplies (up to 75%) for the refinery are imported from Asia and the Middle East.

Pertamina has signed a long-term import contract with Saudi Aramco to supply the refinery's crude need. Pertamina has also continued examining the cheaper option of purchasing crude from local producers.

### *Balikpapan*

The Balikpapan refinery in East Kalimantan is more modern than Cilacap

and Dumai, and consists of both a primary unit and a secondary processing (Hydro Cracker) unit. The plant has a refining capacity of 260,000 bpd and can produce up to wax. Bechtel upgraded the refinery in 1983. Unfortunately, due to the facility design, the plant cannot process crude from co-located crude oil producers in Indonesia (Total, Unocal, Talisman, and VICO). The refinery only processes imported crude oil.

### ***Balongan***

Indonesia's newest state-owned refinery at Balongan in West Java has the capacity to process 125,000 bpd of domestic crude. It has two production units: the crude distillation unit (CDU) and the residue catalytic cracking unit (RCCU). The CDU processes crude oil into naphtha, kerosene, automotive diesel and residue; the RCCU turns the residue from CDU into LPG and Premium, Super TT and Premix gasoline. The RCCU, one of the world's largest, has a processing capacity of 83,000 bpd, but has experienced problems since its commissioning in 1994. The refinery was initially designed to supply export markets, which is why it is also called the Exor (export oriented) I refinery. Balongan supplies about 70% of Jakarta's refined product demand. The plant processes Duri crude (70%), Minas crude (20%) and Jatibarang crude (10%). Pertamina closed the plant for routine maintenance during September-October 2003. However, a crude pipeline leak required Pertamina to run the refinery at 80% capacity for another month.

In the last year, Balongan refinery was upgraded to a production capacity of 165,662 barrels a day and produces a range of fuel products such as premium gasoline, high grade fuel Pertamina Plus

and Pertamina Dex, and liquefied petroleum gas.

### ***Kasim***

This is a small, mini-refinery located in Papua and has only a simple distillation (primary) unit with an installed capacity of 10,000 bpd. Its main products are premium fuel, diesel and kerosene.

## **New Refinery Projects?**

According to the Energy Ministry, Indonesia needs about \$15 billion in refinery investment in the coming years to reduce the country's growing reliance on fuel imports (30 percent of consumption currently). Domestic demand for fuel is increasing by 7 percent annually, but refining capacity has remained stagnant for the last decade.

Local firm PT Intanjaya Agromegah Abadi (backed by Saudi investors) and its joint venture partner, Texas-based Inter Global Technologies (IGT), have been seeking to establish refineries in Indonesia, starting with an oil refinery in Parepare in South Sulawesi. This refinery was initially licensed in 1996, but development stalled during the 1997-98 economic crises and has not restarted. IAA holds 30% stake in PT Kilang Minyak Nusantara, owner of the proposed refinery, while IGT holds the remaining 70%. The proposed refinery will have a capacity of 300,000 barrels per-stream day (BSPD). No construction has begun on the plant.

In July 2005, Pertamina signed a memorandum of understanding (MOU) with China's Sinopec to construct a refinery in Tuban, East Java with a capacity between 150,000 to 200,000 bpd. However the refinery construction, which

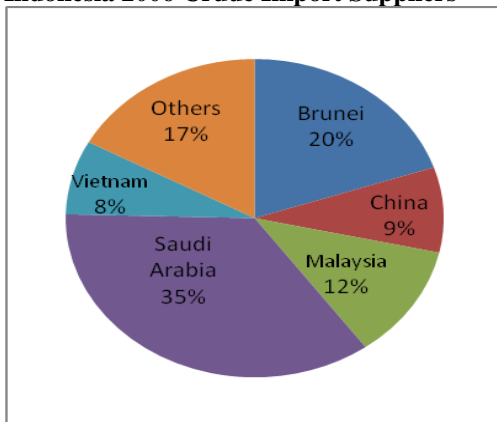
was due to start in December 2005, has been postponed. Pertamina is reported to be looking for another partner to develop the project as there is no final consent of participation from Sinopec.

Pertamina has also sought overseas partners for new refineries, and has looked to Gulf states such as Kuwait and Iran as potential investors. Despite talk and some exploratory MOUs, no firm commitments have yet been made.

## Fuel Imports

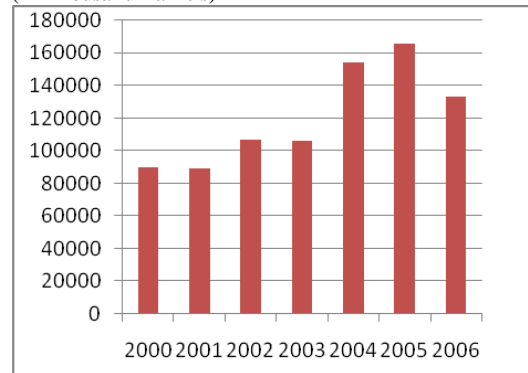
GOI officials estimate that Indonesia became a net importer of fuel in 2006. The output of Indonesia's nine refineries is below domestic consumption, so that refined fuel products must be imported, as well as crude for blending.

**Indonesia 2006 Crude Import Suppliers**



In 2006, fuel product imports decreased 19.5% to 133.4 million barrels from 165.7 million barrels in 2005. Imports consisted of gas oil (51%), High Octane Motor Component 88 (28%), fuel oil (8%), HOMC 92 (5%), and kerosene and avtur, (4% each).

**Imports of Fuel Products**  
(In Thousand Barrels)



Pertamina has adopted a four-pronged approach to source adequate supplies of fuel for Indonesia's domestic market:

- Production from Pertamina refineries;
- Time-limited contracts for fuel imports from the Middle East;
- Spot product purchases from Singapore; and
- Overseas crude processing deals (CPD).

## Pricing and Subsidies

The government still continues to administer petroleum product prices, which remains a matter of great sensitivity. Over the past four years, the government tried to reduce fuel subsidy by increasing fuel prices. However in the past two years, fuel subsidies have jumped back from Rp 64 trillion in 2006, to Rp 84 trillion in 2007 due to the increase in crude prices. In 2008, the GOI revised its estimated fuel subsidy expenditure from Rp 47 trillion to Rp 180 trillion, if the Indonesian crude price (ICP) averages \$127 per barrel.

Following the fuel price increases of 2005, Indonesian officials indicated that they would move toward a market pricing

mechanism for all fuels. In 2005, the government managed to completely phase out subsidies for industry fuels and high-octane transportation fuels (Pertamax and Pertamax Plus). Prices for these fuels are administered monthly by Pertamina. In its renewed Energy Blueprint, the government planned to fully remove subsidies for premium and diesel fuels by 2006 and kerosene by 2007, but no steps were taken toward this goal between 2005 and 2008. May 2008's subsidized fuel price increases did not represent a shift to a market price mechanism. The blueprint also envisions more efficient use of fossil fuels and encourages alternative energy source development.

## Subsidized Fuel

Following two dramatic subsidized fuel price increases in 2005, prices remained flat until May 2008, when increases in the international price of crude forced the government to increase prices again. As per Presidential Decree No. 55/2005, the focus of which was not changed by the 2008 fuel price increase, subsidized fuel is for the use of the following customers:

- Households (kerosene)
- Fishing boats of maximum 30 tons in size with maximum fuel consumption of 25 kiloliters (KL) per month (gasoil)
- Transportation, including private and government vehicles, public transport and domestic route ships (premium and gasoil)
- Public services facilities, including hospitals, places of worship, education facilities, crematorium and government offices (gasoil).

## Subsidized Fuel Price Changes (2004 – 2008) (Rupiah per liter)

Fuel Type	2004	Mar 2005	Oct 2005	May 2008
Premium	1,810	2,400	4,500	6,000
Gasoil	1,650	2,100	4,300	5,500
Kerosene	700	900	2,000	2,500

Source: Pertamina

The transportation and household sectors account for approximately 48% and 18% of total national fuel consumption. The price hike has been effective in suppressing domestic fuel consumption. Following October the 2005 price hike, Pertamina reported an average consumption decline of 20 percent in October and November. Premium and gasoil consumption declined by almost 36 percent and 30 percent respectively and by the end of the year, total fuel consumption fell below its national quota.

## Non-Subsidized Fuels

### Industry Fuels

In July 2005, Indonesia started a shift of its industry fuel prices to market-based pricing. The market price reference is calculated by adding 15 % to the average monthly Mid Oil Platt Singapore (MOPS), plus 15% for a market mechanism and an additional 10% for Value Added Tax (VAT). Pertamina announces price changes twice per month.

## Industry Fuel Price Changes (2005-2008) (Rupiah per liter)

Fuel Type	1 Oct 2005	1 Jul 2006	1 Jul 2007	1 Jul 2008
Premium	5,160	6,502	6,179	9,136
Gasoil	5,350	a) 6,609 b) 6,321	a) 6,125 b) 5,859	11,277
Kerosene	5,600	6,372	5,926	11,229
Diesel Oil	5,130	6,065	5,677	10,984
Fuel Oil	3,150	3,759	3,950	6,784

a) Transportation price; b) Industry price

Source: Pertamina

Included in the industry category are all other industries not stated in the

Presidential Decree No. 55/2005. Initially the price disparity between subsidized and industry fuels sparked increased smuggling activity and fuel adulteration with subsidized fuels, especially for kerosene (as of July 2005 subsidized price was Rp 900 as opposed to Rp 4,940 for industry). However, with increased government efforts to crack down on smuggling and narrowing price gaps following the 2005 price increase, the activities began to subside, although not completely. There were indications that adulteration and smuggling picked up again in 2007 and 2008, prior to the May 2008 subsidized fuel price increase.

In anticipation of downstream market liberalization and to secure its market share, Pertamina also began offering discounts to its industrial customers starting November 2005. Price discounts ranging between one and four percent are offered to industry customers willing to sign one-year contracts for a minimum of 100 KL of fuel per month.

### ***Other Transportation Fuels***

Indonesia has three higher-grade fuels available on the market for the transportation sector, Pertamina Plus, Pertamina and recently Pertamina DEX. Pricing for these fuels are also adjusted according to the market. Consumption of high-grade fuels declined considerably since Pertamina raised prices more than 50 percent in mid December 2004. Average daily consumption of these fuels fell to around 500 KL per day from 2,000 KL. Consumption for these fuels accounts for less than 1 percent of national fuel consumption.

### **High Grade Fuel Price Changes (2006-2008)** (Rupiah per liter)

Fuel Type	1 Jul 2006	1 Jul 2007	1 Jul 2008
Pertamax	6,000	6,400	10,300
Pertamax Plus	6,250	6,500	10,600
Pertamina DEX	6,100	6,300	13,000

Source: Pertamina

### ***Unleaded Gasoline Phase-in***

Indonesia's effort to phase out leaded gasoline began almost a decade ago and has received significant assistance from the U.S. Environmental Protection Agency and USAID. The government program to switch to unleaded gasoline (ULG) was overdue from its extended completion target in 2005, but the plan was officially accomplished in 2006.

Pertamina delayed full compliance with the Energy Ministry's Decree No.1585/1999, mandating nationwide unleaded gasoline by January 2003. Insufficient facilities and funding constraints limited Pertamina's ability to supply unleaded fuel nationwide. Pertamina completed its upgrade of the Balongan refinery in 2005, which produces a high-quality diesel fuel, Pertamina DEX.

ULG was first introduced in a gradual basis to five areas, the greater Jakarta area (July 2001), Cirebon in West Java (October 2001), Bali (November 2002), Batam (June 2003) and Surabaya (September 2004). These areas represent more than 40 percent of the national market. As of July 2006, ULG was sold at all gas stations nationwide. Leaded gas is no longer available, even to older cars that lack catalytic converters.

## **Downstream Market Liberalization**

Beginning in 1997, the GOI has moved slowly but surely to encourage greater capacity and efficiency in the downstream sector. In the early 1990's, the GOI determined that Pertamina did not have the funds to build additional refining capacity and undertook a series of measures to attract private investment in the refining sector. Under Presidential Decree (PD) No. 31/1997, the GOI loosened Pertamina's hold on refining by allowing private refineries to market their products domestically through Pertamina.

### ***Highlights of PD 31/1997***

- Private refineries can be set up by Indonesian companies in partnership with foreign firms or with Pertamina;
- Pertamina buys oil fuels and other refinery products from private companies on a long-term trade contract basis in line with Pertamina's needs and absorption capability and considering the economics of the private corporation's refinery products;
- Pertamina's buying price for fuel from those private refineries is based on the international market price;
- Oil products produced by private refineries which are not needed domestically may be sold by private companies on the international market;
- Pertamina will remain the sole distributor in the domestic market.

Oil and Gas Law 22/2001 marked another step toward liberalizing the downstream

sector. The Law generally envisioned a downstream sector which:

- Eliminates Pertamina's monopoly or retail position by November 2005;
- Ensures that investors and participants are given equal regulatory and legal treatment;
- Establishes a transparent pricing regime based on market prices;
- Rationalizes and streamlines downstream administration;
- Allows local and private investors to enter the downstream sector in four areas: processing, transportation, storage and marketing.

In 2004, the government issued Implementing Regulation No. 36/2004 on the sector. The regulation states:

- The Minister of Energy and Mineral Resources is in charge of issuing licenses for businesses wishing to engage in downstream activities;
- The Ministry of Energy and Mineral Resources determines types, standard and quality of fuel oil, gas and other fuels that can be marketed domestically;
- BPH Migas (Downstream authority) regulates the provision, distribution, and supply of fuel products;
- BPH Migas appoints companies with "special rights" as gas pipeline operators and determines tariffs for other pipeline users;
- BPH Migas stipulates fuel prices for households and small industries. In addition, BPH Migas will supervise pricing for fuel products and gas;

- Downstream businesses can be operated by corporations that have obtained a business license issued by the Ministry of Energy and Mineral Resources;
- Downstream activities include the processing of crude oil and gas into oil fuel and gas fuel, LPG and LNG; the transport of processed oil/gas products via pipeline and otherwise; the storage of such products; and the sale, purchase, export and import of such products;
- Processing of oil and gas products into lubricants and petrochemical products are categorized as downstream activities and are jointly regulated by the Ministry of Energy and Mineral Resources and the Ministry of Industry;
- There are separate licenses for processing, transportation, storage and trading. There are two types of fuel trading licenses: wholesale and limited trading. Wholesale licenses are for companies that intend large-scale sale/import/export of processed oil and gas products and have their own storage facilities. Limited trading licenses are for similar companies that do not have storage facilities;
- Wholesale license holders can distribute their commodities to end users, while limited trading license holders can only sell their commodities to users with storage facilities or receiving terminals;
- The government sets policy on the national Strategic Fuel Reserve, and can obligate downstream license holders to contribute to the reserve. The government determines the size of each company's contribution.

Foreign investors are starting to enter the downstream market. In November 2005, Shell became the first private investor to open a fuel retail station in Jakarta's bordering city, Tangerang. Malaysia's Petronas followed suit and opened its retail station in Cibubur in December 2005. Other investors, including Chevron, have expressed interest in entering the downstream sector.

Although the downstream market is formally liberalized, Pertamina retained its public service obligation (PSO) to ensure distribution of fuel to the whole nation until 2006. Presidential Decree No.71/2005 allows BPH Migas to appoint other companies to distribute fuels through an open bidding process. Tenders for subsidized fuel are based on the MOPS price plus a premium for distribution costs and profit margin. In addition any company wishing to distribute subsidized fuel must also distribute fuel to remote areas. It will take time for new players to develop their distribution network before they can participate in the subsidized fuel market.

In response to increased competition, Pertamina took some defensive measures. In 2005, the company changed its corporate logo, renewed its fuel station franchising procedures and revamped its existing fuel stations. Pertamina plans to add another 500 fuel stations to its existing 2,500 fuel stations jointly with its partners. Pertamina also signed a \$6 billion MOU with Canada Accelon Energy to build a 28 million barrels per year synthetic diesel fuel factory in East Kalimantan. Under the MOU, Accelon must exclusively sell the Euro-4 standard diesel fuel produced at the factory to Pertamina for 15 years starting 2008.

### ***Lube Oil***

Downstream liberalization is also expected to change market trends and bring benefits to consumers in the oil lubricant market. Industry players estimate that over 250 brands of imported and local lubricant currently exist in the market. Pertamina remains the market leader although its market share is declining. Pertamina's current market share is estimated at around 55% compared to more than 70% prior to liberalization. Pertamina operates 3 lube oil blending plants, located in Jakarta, Cilacap and Surabaya, with a combined capacity of 573,000 liters. Other prominent players in the market include Pennzoil, Evalube, BP, Shell, and Petronas. Motor vehicles manufacturers, such as Toyota, Honda and Suzuki have also entered in the motor lubricant market and have started distributing their own lubricant brands.

Three years after the liberalization, the industry is haunted with oversupply and production capacity. In 2005, domestic production capacity reached 1.2 million KL per year, while demand is estimated at around 700,000 KL/year. Currently market competition is very high and is intensified after March 2006, when the government reduced import tariffs for mineral-based lubricants from 30% to 15%. The Indonesian Lube Association (Aspelindo), whose members' production account for half of national lubricant production, is very discouraged by the decision. As more imported products enter the market, local producers are gradually losing their market share.